

What is the Capital Asset Pricing Model?

Worksheet

CAPM calculates expected return as $E(R) = R_f + \beta(R_m - R_f)$, where R_f is the risk-free rate, β is systematic risk, and $(R_m - R_f)$ is the market risk premium.

$$E(R) = R_f + \beta(R_m - R_f)$$

$E(R)$ = Expected return (%)

R_f = Risk-free rate (%)

β = Systematic risk (beta) (unitless)

R_m = Expected market return (%)

Questions

1. CAPM formula is...

- A) $E(R) = R_f + \beta(R_m - R_f)$
- B) $E(R) = R_f \times \beta$
- C) $E(R) = R_m - R_f$
- D) $E(R) = \beta$

2. What does $\beta=2$ mean?

- A) Twice as risky as market
- B) 50% less risky
- C) No risk
- D) Zero return

3. Higher beta $\rightarrow$ higher...

- A) portfolio diversification
- B) expected return (for same R_f & R_m)
- C) bond credit quality
- D) time to maturity

4. Risk-free rate (R_f) is typically...

- A) yield on government bonds
- B) average stock dividend
- C) inflation rate
- D) market volatility

5. A stock with $\beta=1.1$, risk-free rate 2%, expected market return 8%. Find expected return.

6. $\beta=1.5$, $R_f=3\%$, $R_m=10\%$. Calculate $E(R)$.

7. Conservative bond fund: $\beta=0.8$, $R_f=2.5\%$, $R_m=9\%$. Expected return?

8. Define: What does CAPM stand for?

9. Define: What is beta?

10. Define: What is the risk-free rate?

Answer Key

1. A) $E(R) = R_f + \beta(R_m - R_f)$ — CAPM adds the risk-free rate to the risk premium scaled by beta.
2. A) Twice as risky as market — $\beta > 1$ means systematic risk above market average.
3. B) expected return (for same R_f & R_m) — More systematic risk demands higher expected return compensation.
4. A) yield on government bonds — R_f is return on zero-risk assets like T-bonds, usually 2–3%.
5. $E(R) = R_f + \beta(R_m - R_f)$ $E(R) = 2 + 1.1(8 - 2)$ $E(R) = 2 + 6.6 = 8.6\%$
6. $E(R) = 3 + 1.5(10 - 3)$ $E(R) = 3 + 10.5 = 13.5\%$
7. $E(R) = 2.5 + 0.8(9 - 2.5)$ $E(R) = 2.5 + 5.2 = 7.7\%$
8. Capital Asset Pricing Model—calculates expected return from risk.
9. Systematic risk coefficient; $\beta = 1$ means investment moves with market.
10. Return on zero-risk assets, typically 2–3% on government bonds.

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